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# INFO SHEET

## Veterinary Services

United States  
Department of  
Agriculture

Animal and  
Plant Health  
Inspection  
Service

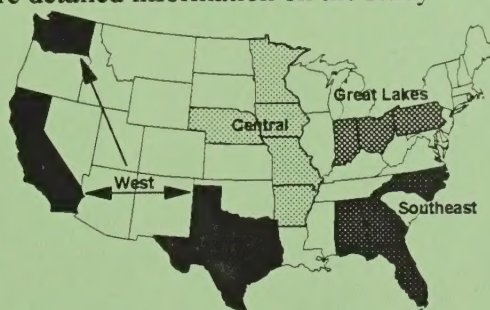
October 2000

## Highlights of Layers '99 Study Results: *Salmonella enterica* serotype Enteritidis

The USDA's National Animal Health Monitoring System (NAHMS) designed the Layers '99 study to provide both participants and the table egg layer industry with information on the United States' layer population for education and research purposes.

The USDA's National Agricultural Statistics Service (NASS) collaborated with APHIS to select a statistically-valid sample from 15 states<sup>1</sup> for Layers '99. The 15-state target population accounted for over three-quarters of the table egg layers in the U.S. on December 1, 1998. NASS enumerators collected data from 208 single and multiple-farm companies via a questionnaire administered February 1-26, 1999. These respondents provided information on 526 farm sites.

State and Federal Veterinary Medical Officers and Animal Health Technicians collected data related to *Salmonella enterica* serotype Enteritidis (SE). Questionnaires were administered from March 22 through April 30, 1999, on 252 of the original 526 farm sites. From May 3 through October 22, 1999, environmental samples to be tested for SE were collected throughout 200 layer houses from manure, egg belts, elevators, and walkways. Rodents were collected in 129 houses. More detailed information on the study and the sampling methodology is available in NAHMS' Layers '99 tabular summary reports.

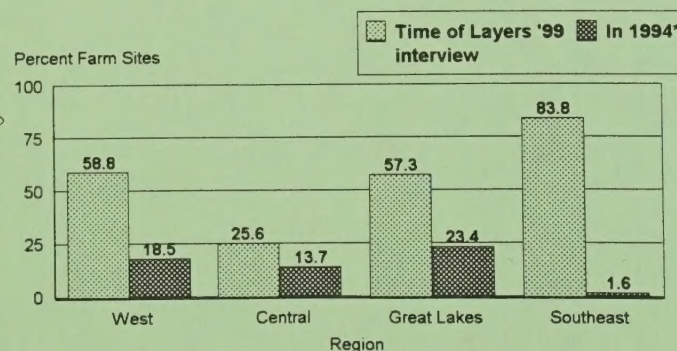


## SE Monitoring and Prevention

- Overall, layers on 69.6 percent of farm sites came from pullet facilities that monitored for SE. The West region had the largest percentage of farm sites (83.0 percent) that obtained their layers from SE monitored pullet facilities.
- A total of 14.6 percent of layers (on 5.4 percent of farm sites) had been vaccinated as pullets against SE. Vaccination status was unknown for an additional 5.4 percent of layers.
- The percentages of farm sites where either finished feed or feed ingredients were tested for SE ranged from 28.8 percent of farm sites in the Central region to 80.7 percent of farm sites in the West (see map below for regions). Testing of feed ingredients was most common for farm sites in the West (76.0 percent) and Southeast (74.5 percent) regions.
- Only 15.7 percent of farm sites routinely tested for SE in 1994, whereas 58.0 percent of farm sites routinely tested for SE in 1999. In 1999, the percentage of farm sites with a SE testing program ranged from 25.6 percent of farm sites in the Central region to 83.8 percent of farm sites in the Southeast region (Figure 1).

Figure 1

Percent of Farm Sites that Routinely Tested for SE in the Layer Houses by Time Frame and by Region



\* Excluded farm sites that were less than 5 years old at the time of the Layers '99 interview.

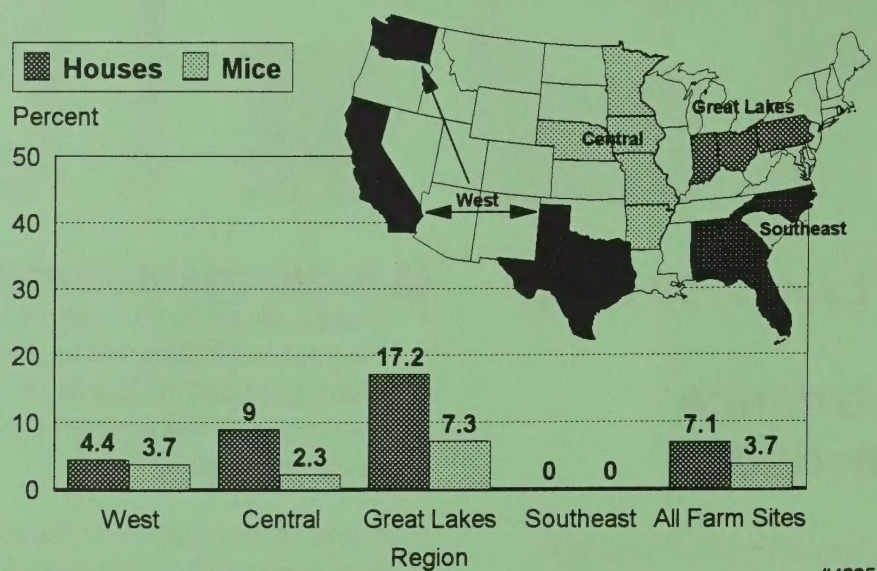
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<sup>1</sup> Alabama, Arkansas, California, Florida, Georgia, Indiana, Iowa, Minnesota, Missouri, Nebraska, North Carolina, Ohio, Pennsylvania, Texas, & Washington.



Figure 2

Percent Layer Houses with at Least One Environmental Culture Positive and Percent Mice Culture Positive for SE by Region



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- Over one-half (56.1 percent) of farm sites participated in a SE quality assurance program, with the most common being a company sponsored program (40.3 percent of farm sites). The percentage of farm sites participating in any program ranged from 22.9 percent in the Central region to 83.8 percent in the Southeast.
- Over one-half (55.0 percent) of farm sites that participated in a SE quality assurance program had an inspection by someone not associated with the farm (i.e., independent third-party verification).
- None of the houses tested positive for SE on farms where the feeders or hoppers were cleaned and disinfected between each flock. No houses tested positive where cages, walls, and ceilings were washed between each flock, whether or not they were fumigated.
- After adjusting for region and flock size, houses with a standardized rodent index<sup>1</sup> of 20 or more were nearly nine times more likely to have SE found within the house than were houses with a rodent index of less than 20.
- Overall, 3.7 percent of house mice cultured were positive for SE. The regional distribution of SE in mice was roughly consistent with the environmental results (Figure 2). The prevalence of SE in mice from environmentally positive houses was nearly four times that of mice from environmentally negative houses.

### Environmental/Mouse Culture Results

- A total of 17 environmental samples were collected from each of 200 layer houses for culture. Overall, SE was found in 7.1 percent of layer houses. Regional prevalence estimates ranged from 0 percent in the Southeast to 17.2 percent in the Great Lakes region.
- Flocks less than 60 weeks of age were 4.7 times more likely to test positive than older, unmolted flocks. Flocks that were 0-16 weeks post-molting were 9.3 times more likely to test positive compared to flocks that were 60 or more weeks of age and unmolted, but flocks more than 16 weeks post-molt had very little increased risk.

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<sup>1</sup>Number rodents trapped per 12 traps in 7 days.